

What is claimed is:

1. A computer system comprising:

a computer having first and second connectors, a bus, and connection control means for enabling/
5 disabling connection between said second connector and said bus; and

an expansion unit capable of being attached/
detached to/from said computer,

wherein said expansion unit has

10 a third connector connectable to said first connector and connected to said first connector when said computer is set at a mounting position of said expansion unit,

a fourth connector connectable to said second
15 connector and arranged to be free to move between a first position where said fourth connector is disconnected from said second connector and a second position where said fourth connector is connected to said second connector when said computer is set at the
20 mounting position,

at least one expansion connector connected to said fourth connector and capable of being mounted with an expansion device,

a loading mechanism for moving said fourth
25 connector between the first position and the second position, and

expansion unit control means for outputting

a connection request signal for connection between said second connector and said fourth connector to said computer through said third connector when said computer is set at the mounting position, moving said fourth connector from the first position to the second position by driving said loading mechanism in accordance with a permission signal sent from said first connector, and outputting a connection completion signal upon completion of movement of said fourth connector to said second position,

said connection control means is set to disable connection between said second connector and said bus in advance, and

said computer includes

computer control means for outputting the permission signal to said expansion unit through said first connector in accordance with the connection request signal, and controlling said connection control means to enable connection between said second connector and said bus when said computer is in a power ON state upon reception of the connection request signal.

2. A system according to claim 1, wherein said expansion unit control means includes means for applying an operating voltage to said expansion device connected to said expansion connector when said computer is in a power ON state.

3. A system according to claim 1, wherein said expansion unit control means includes a sensor for detecting that said computer is set at the mounting position.

5 4. A system according to claim 1, wherein said expansion unit control means detects that said computer is set at the mounting position by monitoring a voltage of a predetermined pin of said third connector.

10 5. A system according to claim 1, wherein said computer includes means for reading attribute information of said expansion device from said expansion unit and setting a system environment for use of said expansion unit in accordance with the attribute information.

15 6. A system according to claim 1, wherein said expansion unit includes

an eject switch for designating to detach said fourth connector of said expansion unit from said second connector, and

20 means for sending a detachment request signal for detachment of said fourth connector to said computer through said third connector when said eject switch designates to detach said fourth connector from said second connector, moving said fourth connector from the
25 second position to the first position by driving said loading mechanism in accordance with the detachment request signal sent from said computer, and outputting

a separation completion signal upon completion of movement of said fourth connector to the first position, and

said computer includes

5 means for, when said computer is in a power ON state, controlling said connection control means to enable connection between said second connector and said bus in accordance with the detachment request signal and outputting a detachment permission signal
10 through said first connector.

7. A system according to claim 6, wherein said expansion unit includes means for stopping applying an operating voltage to said expansion device connected to said expansion connector in accordance with the
15 detachment permission signal.

8. A system according to claim 6, wherein said computer includes means for determining in accordance with the detachment request signal whether said expansion device connected to said expansion connector
20 is being used, outputting the detachment permission signal when said expansion device is not being used, and stopping outputting the detachment permission signal when said expansion device is being used.

9. A system according to claim 8, wherein said
25 computer includes means for informing an operator that said expansion device connected to said expansion connector is being used when it is determined that said

expansion device is being used.

10. A system according to claim 6, wherein said computer includes means for outputting the detachment permission signal in accordance with the detachment request signal when said computer is in a power OFF state.

11. A computer system comprising:

a computer having a first connector, a bus, a second connector connected to said bus, and a nonvolatile memory; and

an expansion unit capable of being attached/detached to/from said computer,

wherein said expansion unit has

a third connector connectable to said first connector and connected to said first connector when said computer is set at a mounting position of said expansion unit,

a fourth connector connectable to said second connector and arranged to be free to move between a first position where said fourth connector is disconnected from said second connector and a second position where said fourth connector is connected to said second connector when said computer is set at the mounting position,

at least one expansion connector connected to said fourth connector and capable of being mounted with an expansion device,

a loading mechanism for moving said fourth connector between the first position and the second position, and

5 expansion unit control means for, when said computer is set at the mounting position, outputting a connection request signal for connection between said second connector and said fourth connector to said computer through said third connector and moving said fourth connector from the first position to the second
10 position by driving said loading mechanism in accordance with a permission signal sent from said first connector, and

said computer includes

computer control means for, when said
15 computer is in a power ON state, executing suspend processing in which information necessary for resuming processing which is being executed is stored in said nonvolatile memory to interrupt the processing and set a power OFF state in accordance with the connection
20 request signal and thereafter outputting the permission signal to said expansion unit through said first connector.

12. A system according to claim 11, wherein said expansion unit control means includes means for
25 outputting a connection completion signal upon completion of movement of said fourth connector to the second position, and said computer control means

includes means for executing resume processing in which the information stored in said nonvolatile memory is used to resume the interrupted processing when the suspend processing is being executed upon reception of the connection completion signal.

13. A system according to claim 12, wherein said expansion unit includes means for starting applying an operating voltage to said expansion device connected to said expansion connector when said computer in a power OFF state is set in a power ON state.

14. A system according to claim 11, wherein said expansion unit control means includes a sensor for detecting that said computer is set at the mounting position.

15. A system according to claim 11, wherein said expansion unit control means detects that said computer is set at the mounting position by monitoring a voltage of a predetermined pin of said third connector.

16. A system according to claim 11, wherein said computer includes means for reading attribute information of said expansion device from said expansion unit and setting a system environment for use of said expansion unit in accordance with the attribute information.

17. A system according to claim 12, wherein said expansion unit includes

an eject switch for designating to detach said

fourth connector of said expansion unit from said second connector, and

means for sending a detachment request signal for detachment of said fourth connector to said computer through said third connector when said eject switch designates to detach said fourth connector from said second connector, and moving said fourth connector from the second position to the first position by driving said loading mechanism in accordance with the detachment request signal sent from said computer, and said computer includes

means for, when said computer is in a power ON state, executing the suspend processing in accordance with the detachment request signal and outputting a detachment permission signal through said first connector.

18. A system according to claim 17, wherein said expansion unit includes means for stopping applying an operating voltage to said expansion device connected to said expansion connector in accordance with the detachment permission signal.

19. A system according to claim 17, wherein said expansion unit includes means for outputting a separation completion signal upon completion of movement of said fourth connector to the first position, and said computer includes means for executing resume processing in which the information

stored in said nonvolatile memory to resume the interrupted processing in accordance with the separation completion signal when the suspend processing is being executed.

5 20. A system according to claim 17, wherein said computer includes means for determining in accordance with the detachment request signal whether said expansion device connected to said expansion connector is being used, outputting the detachment permission
10 signal when said expansion device is not being used, and stopping outputting the detachment permission signal when said expansion device is being used.

 21. A system according to claim 20, wherein said computer includes means for informing an operator that
15 said expansion device connected to said expansion connector is being used when it is determined that said expansion device is being used.

 22. A system according to claim 21, wherein said computer includes means for outputting the detachment
20 permission signal in accordance with the detachment request signal when said computer is in a power OFF state.

 23. A computer system comprising:
 a computer; and
25 an expansion unit capable of being attached/detached to/from said computer and constituted by an expansion unit main body and a power supply unit,

wherein said power supply unit is connected to said expansion unit main body through a cable and supplies a first power to said expansion unit through said cable, and

5 said expansion unit main body includes
 at least one expansion connector connectable
to an expansion device for expanding a function of said
computer,
 a mounting portion for mounting said
10 computer, and
 a power supply circuit for supplying an
operating power to said expansion device on the basis
of the first power supplied from said power supply unit
when said computer is mounted at said mounting portion.

15 24. A system according to claim 23, wherein said
expansion unit main body includes means for designating
to start/stop supplying the first power through said
cable.

20 25. A system according to claim 23, wherein said
expansion unit main body includes means for designating
to start supplying the first power through said cable
when said computer is mounted at said mounting portion.

25 26. A system according to claim 23, wherein said
power supply unit has a plurality of power supply
outlets, and said expansion unit main body includes
means for enabling said plurality of power supply
outlets in a predetermined order with predetermined

time lags.

27. A system according to claim 23, wherein said computer includes means for designating to start/stop supplying the first power through said expansion unit main body and said cable when said computer is mounted at said mounting portion.

28. A system according to claim 27, wherein said expansion unit has a plurality of power supply outlets, and said computer includes means for enabling said plurality of power supply outlets in a predetermined order with predetermined time lags.

29. A computer system comprising:
a computer; and
an expansion unit capable of being attached/
detached to/from said computer,
wherein said expansion unit includes
at least one expansion connector connectable
to an expansion device for expanding a function of said computer,

a mounting portion for mounting said computer, and

a lock mechanism for fixing said computer at a predetermined position of said mounting portion when said computer is mounted at said mounting portion.

30. A system according to claim 29, wherein said expansion unit has a detachable input device and includes means for operating said lock mechanism when

specific information is supplied from said input device.

31. A system according to claim 29, wherein said expansion unit has a detachable input device and
5 includes means for releasing said lock mechanism when specific information is supplied from said input device.

32. A system according to claim 29, wherein said expansion unit includes means for operating said lock
10 mechanism when said computer is mounted.

33. A system according to claim 29, wherein said expansion unit has an eject switch for detaching said
mounted computer and includes means for releasing said lock mechanism in accordance with an operation of said
15 eject switch.

34. A computer system comprising:

a computer having a first connector connected to a bus and at least one second connector connectable to an external device;

20 a relay unit connected to said computer and having a third connector connected to said bus which relays said first connector, and at least one fourth connector connectable to said external device which relays said second connector; and

25 at least one expansion unit connectable to said relay unit,

wherein said expansion unit has

a mounting portion capable of being mounted with an expansion device for expanding a function of said computer,

an internal bus connected to said expansion
5 device mounted at said mounting portion,

a fifth connector connected to said internal bus, and

a sixth connector connectable to either said third connector or said fifth connector of another
10 expansion unit.

35. A system according to claim 34, wherein said first and second connectors are arranged on a rear surface of said computer,

said relay unit is mounted on said rear surface of
15 said computer so as to have said third connector on a lower surface and relays said first and second connectors of said computer, and

said at least one expansion unit is mounted under said computer and said relay unit to overlap another
20 expansion unit such that said bus of said computer is connected to said expansion device of said expansion unit.

36. An electronic equipment comprising:

a processor incorporating a delay circuit element
25 whose delay time changes depending on a temperature;

a detection circuit, connected to said delay circuit element, for detecting an internal temperature

of said processor from a change in response delay of
said delay circuit element; and

clock control means for controlling a clock signal
supplied to said processor such that an operating speed
5 of said processor is decreased when the internal
temperature detected by said detection circuit exceeds
a first temperature.

37. An electronic equipment according to claim 36,
further comprising

10 a nonvolatile memory, and
means for causing said nonvolatile memory to store
information necessary for resuming processing which is
being executed, thereby powering off said electronic
equipment when the internal temperature detected by
15 said detection circuit exceeds a second temperature.

38. An electronic equipment comprising:

a processor for controlling said electronic
equipment;
a detection circuit for detecting an internal
20 temperature of said processor; and
clock control means for controlling a clock signal
supplied to said processor such that an operating speed
of said processor is decreased when the internal
temperature detected by said detection circuit exceeds
25 a first temperature.

39. An equipment according to claim 38, further
comprising

a nonvolatile memory, and

suspend means for causing said nonvolatile memory to store information necessary for resuming processing which is being executed, thereby powering off said electronic equipment when the internal temperature detected by said detection circuit exceeds a second temperature.

40. An equipment according to claim 39, further comprising

a fan for exchanging air in the periphery of said processor,

a driving circuit for driving said fan, and

means for controlling said driving circuit to cool the air in the periphery of said processor in accordance with the internal temperature detected by said detection circuit.

41. An equipment according to claim 40, wherein said processor has an element whose characteristics change depending on a temperature, and

said detection circuit detects the internal temperature of said processor on the basis of a characteristic signal from said element.

42. An equipment according to claim 40, wherein said processor has a p-n junction circuit element for temperature detection, and

said detection circuit detects the internal temperature of said processor on the basis of a signal

supplied from said p-n junction circuit element.

43. An equipment according to claim 40, wherein said processor has a transistor circuit element for temperature detection, and

5 said detection circuit detects the internal temperature of said processor on the basis of a signal supplied from said transistor circuit element.

44. An equipment according to claim 40, wherein said processor has a thermistor circuit element
10 for temperature detection, and

 said detection circuit detects the internal temperature of said processor on the basis of a signal supplied from said thermistor circuit element.

45. An equipment according to claim 40, wherein
15 said processor has a delay circuit element for temperature detection, and

 said detection circuit detects the internal temperature of said processor on the basis of a signal supplied from said delay circuit element.

20 46. A computer system comprising:

 a computer having a processor for controlling said entire computer;

 an expansion unit used to expand a function of said computer and capable of being attached/detached
25 to/from said computer; and

 a sensor for detecting a temperature of said processor,

wherein said expansion unit includes

a fan for exchanging air in the periphery of
said processor,

a driving circuit for driving said fan, and

5 control means for appropriately setting the
temperature of said processor by controlling said
driving circuit in accordance with the temperature
detected by said sensor.

47. A system according to claim 46, further
10 comprising

communication means for performing communication
between said computer and said expansion unit, and

wherein said sensor is arranged near said
processor in said computer and outputs a signal
15 representing the temperature of said processor to said
expansion unit through said communication means.

48. A system according to claim 46, wherein said
sensor is arranged near a mounting portion of said
expansion unit, at which said computer is mounted.

20 49. A system according to claim 48, further
comprising

communication means for performing communication
between said computer and said expansion unit, and

wherein said sensor outputs a signal representing
25 the temperature of said processor to said expansion
unit through said communication means, and

said computer includes means for controlling

a clock supplied to said processor so as to decrease an operating speed of said processor when the temperature of said processor, which is sent through said communication means, exceeds a first temperature.

5 50. A system according to claim 48, further comprising

 communication means for performing communication between said computer and said expansion unit, and
 a nonvolatile memory, and

10 wherein said sensor outputs a signal representing the temperature of said processor to said computer through said communication means, and

 said computer includes means for causing said nonvolatile memory to store information necessary for
15 resuming processing which is being executed, thereby powering off said computer when the temperature of said processor, which is sent through said communication means exceeds a second temperature.